WHAT IS CLAIMED IS:

1. A pulse width modulation system, comprising:

a register; and

a code word generator having an input for receiving a specified output frequency and a specified duty cycle and being operable to generate code words of different lengths, wherein the code word generator is operable to generate a base code word having a length set to achieve the specified output frequency and having a thermometer code value set in accordance with the specified duty cycle, the code word generator being further operable to load the register with a code word pattern including a sequence of one or more copies of the base code word.

2. The pulse width modulation system of claim 1, wherein the register has a parallel input and a serial output.

3. The pulse width modulation system of claim 2, wherein the register further has a serial input connected to the serial output.

4. The pulse width modulation system of claim 1, wherein the code word generator comprises a decoder having an input for receiving the specified duty cycle and being operable to decode the specified duty cycle into a thermometer code word.

5. The pulse width modulation system of claim 4, wherein the duty cycle is specified by an K-bit binary word and the decoder is operable to decode the binary word into a 2^K–bit thermometer code word.

6. The pulse width modulation system of claim 4, wherein the register is clocked at a frequency f_{CLK} and the specified output frequency f_{OUT} is given by $f_{OUT} = f_{CLK}/2^{K+j-1}$, where j has an integer value from 0 to M, M has an integer value of at least 1, and K has an integer value equal to the bit resolution with which the duty cycle is specified.

7. The pulse width modulation system of claim 6, wherein the code word generator is operable to generate the base code word by duplicating each bit of the thermometer code word 2^{j-1} times and assembling the duplicated bits into a

2^{K+j-1}-bit base code word encoded with a thermometer code value set in accordance with the specified duty cycle.

8. The pulse width modulation system of claim 6, wherein the code word generator is operable to load the register with a code word pattern including 2^{M-j} copies of the base code word.

9. The pulse width modulation system of claim 6, wherein the register has at least 2^{K+M-1} bits.

10. The pulse width modulation system of claim 1, wherein the code word generator is operable to reduce duty cycle resolution to achieve the specified output frequency when the specified output frequency is greater than a threshold output frequency.

11. A pulse width modulation method, comprising:

receiving a specified output frequency selected from a set of multiple available output frequencies and a specified duty cycle selected from a set of multiple available duty cycles;

in response to the specified output frequency and the specified duty cycle, generating a base code word having a length set to achieve the specified output frequency and having a thermometer code value set in accordance with the specified duty cycle; and

generating a code word pattern including a sequence of one or more copies of the base code word.

12. The pulse width modulation method of claim 11, further comprising loading the generated code word pattern into a register having an output for delivering a pulse width modulation signal at the specified output frequency and with the specified duty cycle.

13. The pulse width modulation method of claim 12, further comprising feeding the pulse width modulation signal back to an input of the register.

14. The pulse width modulation method of claim 11, further comprising decoding the specified duty cycle into a thermometer code word.

15. The pulse width modulation method of claim 14, wherein the duty cycle is specified by an K-bit binary word and the decoder is operable to decode the binary word into a 2^K–bit thermometer code word.

16. The pulse width modulation method of claim 14, wherein the specified output frequency f_{OUT} is given by $f_{OUT} = f_{CLK}/2^{K+j-1}$, where f_{CLK} is a register clocking frequency, i has an integer value from 0 to M, M has an integer value of at least 1, and K has an integer value equal to the bit resolution with which the duty cycle is specified.

17. The pulse width modulation method of claim 16, wherein the base code word is generated by duplicating each bit of the thermometer code word 2^i times and assembling the duplicated bits into a 2^{K+j-1}-bit base code word encoded with a thermometer code value set in accordance with the specified duty cycle.

18. The pulse width modulation method of claim 16, wherein the generated code word pattern includes 2^{M-j} copies of the base code word.

19. The pulse width modulation method of claim 16, further comprising loading the generated code word pattern into a register having at least 2^{K+M-1} bits.

20. The pulse width modulation method of claim 11, further comprising reducing duty cycle resolution to achieve the specified output frequency when the specified output frequency is greater than a threshold output frequency.